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A Twenty-Mile Boat.

GREATEST HOPES OF BUILDERS AND OWNERS ARE REALIZED IN THE FIRST TRIAL TRIP OF THE NORTHERN LINE PASSENGER STEAMER NORTHWEST—A GRAND SHIP.

Without any disposition to indulge in broad statements on account of a feeling of local pride, the lakes can now boast of the greatest merchant ship ever constructed in America. The Northern line passenger steamer Northwest, built by the Globe Iron Works Company for lake service in connection with the Great Northern Railway between Duluth and Buffalo, had a trial trip on Monday last, and for a boat of 7,000 horse power it was probably the most successful initial trip ever made in this or any other country with a ship of equal size. There is now no doubt of the boat being capable of 20 miles on regular service. On a run of about 120 miles, not a single stop was made for even a hot journal, the Belleville boilers which are new to the most advanced engineers of the country were worked without the slightest hitch of any kind, and the ship met with sea enough on the trip to develop any features that might be unfavorable in a passenger boat.

Readers of the REVIEW will be most interested in the operation of the new boilers and the performance of the twin quadruple engines, which are so far in advance of anything as yet attempted on merchant vessels in this country, aside from the work of the Cramps on the new American Line ships building at Philadelphia. At the dock in the ship yard the shallow water did not permit of satisfactory work with the engines in removing the stiffness during the several days in which they had been tried under low steam pressure, but the boat was not long past the piers on the run across Lake Erie Monday, when the number of turns was increased from sixty to eighty and then to ninety-four and ninety-eight. By this time the small party aboard began to realize that the steamer was speeding along at a rate never before experienced on a big vessel on the lakes, but excitement and proud feelings, with frequent visits by everybody to the engine room, were increased on the return trip, when a speed of 108 turns was reached with steam on the boilers at only 200 pounds, and 175 pounds on the engines. This was the maximum of revolutions and steam which it was thought advisable to reach in the first trial, although in regular service the boiler pressure is expected to be as high as 250 pounds and the number of revolutions 125. But even at this stage of power performance there was a feeling of rejoicing throughout the ship that was as manifest in the faces of the principals of the ship building company and the managers of the steamship company as it was in the few guests who realized that they were being treated to a ride over the lake similar to the performance of Atlantic liners.

In the boiler rooms, all but one of the twenty-eight Belleville generators were all in operation during the greater part of the entire trip, and with the blowers working the firemen were actually complaining of their quarters being too cool, on account of the draft. There is no question of the steam supply being considerably in excess of the greatest requirements, and judging from this first trip it would, in fact, seem that there would be steam enough almost for a third engine in the boat. An illustration of the steam making qualities of the boilers that occurred just before the start of the boat is worthy of note. Fire in the furnaces under two of the boilers had been partly banked and the pressure was 124 pounds. A fireman raked the coals over the grates of the two furnaces, threw in a few additional shovelfuls of coal and closed the furnace door. Four minutes later by the watches of several visitors who were inspecting the fire hold, the steam guages on the two boilers registered 230 pounds, or a gain of more than 100 pounds. Although such an occurrance would hardly be expected with the engines running at high speed, the ease with which steam was supplied on Monday's run can be imagined when the performance referred to is taken into account.

As to the actual speed of the boat or the horse power developed by the engines during any period of the run of about 120 miles, there is no positive knowledge. It was not intended to determine matters of this kind on an important scale on the first trip. Mr. Walter Miller, constructing engineer of the Globe company, had prepared with Mr. George Shepard and one or two other assistants, to take some data, but by an unfortunate misunderstanding regarding the departure of the boat, even this was not done. It is certain, however, that the builders and owners, as well as others aboard the boat who are capable of good judgment in the matter, are satisfied that in regular service the boat will make 20 miles an hour, as is expected of her, and that under trials of speed she will go considerably over that mark. Only in one part of the run was there an opportunity of calculating time. The distance from a point a little below Chagrin river to the piers at Cleveland was put down at about nineteen miles, and this was covered with the engines averaging about 100 revolutions, or 20 per cent. less than the probable maximum, in 55 minutes, which would be at the rate of 20.7 miles an hour.

In any part of this big, long ship forward of the engines there was at no time during the trip any indication of vibration, even when she was turned off her course several times by Capt. Campau, and once put into the trough of quite a lumpy sea. A person seated in the elegant and spacious dining room forward would not know that there was an engine in the boat. In the light work of the cabins just aft of the open engine-room space there is, however, something of a trembling motion that will need some attention, but it can readily be eliminated, if it is desired to do so, as the cause of it is well understood and it was, in fact, partly expected.

General Manager John Gordon, Assistant Manager F. P. Gordon and Mr. C. H. Tucker, Cleveland agent of the Northern line, were the only representatives of the steamboat company on the trip. The Globe company was represented by President H. M. Hanna, Vice President and General Manager John F. Pankhurst and Secretary Luther Allen, and Messrs. Sheldon, Hay and Hamilton, who are in charge of the drafting, machinery and boiler departments, respectively. Among others present who were interested in the building of the boat were Mr. Frank E. Fisher of the Fisher Electric Company of Detroit, Abner Crossman of Crossman & Lee, art decorators of Chicago, and G. L. H. Arnold, who was associated with Miers Coryell in looking after the construction of the Belleville boilers. Capt. George P. McKay, Messrs. Dewolf and McGrath, local inspectors of steam vessels, Collector of Customs August Zehring and Deputies Fenton and Creech were also present by invitation. According to the rulings of the government officers just named, the official number of the North West is 131,661. Her registered tonnage is 4,229 gross and 2,981 net, and she is allowed 442 cabin passengers, 211 immigrants and a crew of 148 all told. This total of 801 is the number of people for which the ship is capable of providing sleeping quarters. No surplus is specified for excursions, as it is not intended to use the boat for excursion purposes at any time. On return from the trial trip, the steamer's search light was operated just off Cleveland harbor and in the river. This light is part of the lighting plant installed by the Fisher Electric Company. It is of 100,000 candle power and has a 30-inch Mangin lens and protecting and diverging lenses of the same diameter. It is worked automatically from the bridge above the pilot house by a very simple controlling device.

Iron Ore Matters—Lake Freights.

If mining operations were to be resumed on a big scale at the Chapin mine as reported in the dispatches printed in numerous papers in lake cities, the result would be a matter of considerable importance in iron ore circles, but unfortunately there is no truth in the stories of a sale of the mine, and only a small force of men has been put to work with a view to light production on account of cheap mining charges. Mr. L. C. Hanna of M. A. Hanny & Co., Cleveland, says the mine is still owned by the Chapin Mining Company, which is controlled by the Milwaukee parties who were forced to accept Schlesinger's assets, when he went down with the financial crash several months ago. The block of stock sold in Milwaukee a few days ago was the Schlesinger stock, which the bank held as collateral, and the sale was simply in accordance with the law governing such matters It was bought in by the bank.

As a result of the difficulties caused by the coal shortage, the "wild" rate on ore from the head of Lake Superior was advanced to 80 cents Wednesday, and further advances are expected on any charters that may be made pending a settlement of the strike, but of course there is the probability of vessels being unable to take advantage of higher rates that may be offered on account of inability to get fuel at any price. The supply of West Virginia coal that had been coming to the lakes quite freely was cut short Wednesday by an order from the Baltimore & Ohio Railway reserving all coal on its line from Philadelphia to Chicago. There is now little probability of a resumption of mining operations before June 1, as the meeting of operators and miners in Cleveland on the 15th may be long drawn out, and in any event several days will elapse after a settlement, before active shipments are begun. Even if the worst comes and 80 per cent. or more of the lake fleet is tied up toward the latter part of the month, on account of inedequate fuel supplies, the result will in the end be to the advantage of the vessels.

Quadruple Engines of the McElroy Flyer.

The new boat building by Mr. McElroy of St. Clair, Mich., for the river trade between Detroit and Port Huron,and which, on account of the speed expected of her, has come to be known as the "McElroy flyer," has been named Orinda, which her owner explains to mean "matchless" or "incomparable." She is provided with quadruple expansion engines, of which we present on the opposite page an outline view from forward. The dimensions of the cylinders are 15″, 22½″, 30″ and 42″ diameter, with a common stroke of 18″. The peculiar shape of the bed-plate is made necessary by the great amount of deadrise of the boat's bottom and by the desire of her owner to get the shaft as low as possible. As it is there is just 4″ of frame left between the lowest point of the bed-plate and the upper edge of the keel It will be seen that the bed-plate is built up of two steel I beams, 12″ deep, weighing 56 pounds per foot, and six transverse cast steel girders carrying the shaft iournals. The whole is carefully fitted together and rigidly bolted with through bolts fitted to reamed holes. The main journals are fitted with white metal shells, removable without lifting the shaft and absolutely interchangeable.

The guide columns are of steel with cast iron guide faces bolted up with through reamed bolts. The backing slides are of wrought iron. The front columns, of which there are two under each cylinder, are of wrought iron, 2½″ diameter. Bolts at top and bottom ends of columns are throughgoing, all fitted in reamed holes. The H.P. cylinder and first and second I.P. cylinders are fitted with piston valves operated by Joy's valve gear. The L.P. valve is a double ported slide and is operated by a single idle eccentric.

The crank shaft is 7¼″ diameter with journals 10″ long. The crank pins are of steel, hollow, and the cranks are of cast steel with counter balances cast on. The cylinders are arranged in 1, 2, 3, 4 order with the H.P. forward. The H.P. and first I.P. cranks are opposite, as are also the second I.P. and L.P., the two latter being at 90° with the two former. Great pains have been taken to secure steady running and to this end the weight of all moving parts has been reduced to the minimum. All wearing parts are made of the best material obtainable and in the case of working points large surface with light weight is secured by making pins hollow. The thrust bearing is of the horseshoe pattern with eight collars running in an oil bath. Automatic oilers are provided for all the principal working points and the shaft journals are lubricated from the under side.

The propeller is left-hand, four bladed, 7 feet diameter with a uniform pitch of 10½ feet. It is a solid bronze casting and the largest ever made in Michigan and probably on the lakes. Steam reversing gear is fitted and means of reversing quickly by hand is also provided.

All pumps are independent and are supplied by Dean Bros. Steam Pump Works of Indianapolis. In this connection it is worthy of note that the builders of these engines, the Frontier Iron Works of Detroit, were the first to introduce this firm's make of condenser in marine work and their success was so marked and instantaneous that it now has a very large sale among steam vessels.

These engines will be entirely below decks so that the whole of the main deck space is available for passengers. The boat is intended exclusively for passenger service. She will carry no freight and will make only four stops between Detroit and Port Huron. In her design, speed has been the leading consideration, and her lines are much finer than anything now afloat on the lakes. It is expected that with 275 revolutions of the engines per minute a speed of 20 miles per hour will be obtained.

The boilers will be two in number, of Ward's torpedo boat pattern, each having a grate surface of 50 square feet and 2,000 square feet of heating surface. They will be placed in a fore and aft line and there will be a separate smoke stack for each. They will be worked under a pressure of 225 pounds, and forced draft will be employed.

A complete system of ventilation by means of exhaust fans is provided for the engine and boiler rooms, and the entire boat will be lighted by electricity.

The perfomance of this boat will be watched with much interest, though it is not intended to make any effort to speed her at first. It might as well be said, however, that many ridiculous statements have been made as to the speed expected, some papers having placed it as high as 30 miles per hour, while none have claimed any less than 25. As a matter of fact those most interested expect, as noted above, to obtain an average speed of 20 miles per hour. It is safe to say that she will show her heels to anything now afloat, even at this speed.

Mr. Alex. E. Brown, of the Brown Hoisting and Conveying Company, Cleveland, described to the Civil Engineers' Club of Cleveland on Tuesday evening the system of cranes in the ship yard of the Newport News (Virginia) Ship Building and Dry Dock Company, by means of which material is picked up in the shops and all parts of the yard and carried to its position on the ship under way. The cranes in the Newport News yard were made by the Brown company.

Use of Water Tube Boilers in the United States Navy.

A paper on the use of tubulous or coil boilers in the United States navy, prepared by W. M. McFarland, past assistant engineer, U. S N., was read at a meeting of New York members of the American Society of Mechanical Engineers in New York on Wednesday of this week, and as the REVIEW was fortunate enough to have secured a copy on the date of the meeting some extracts are taken from it. The paper is not descriptive and does not go into the subject technically. It is merely an account of the experience of the navy with steam generators of this kind.

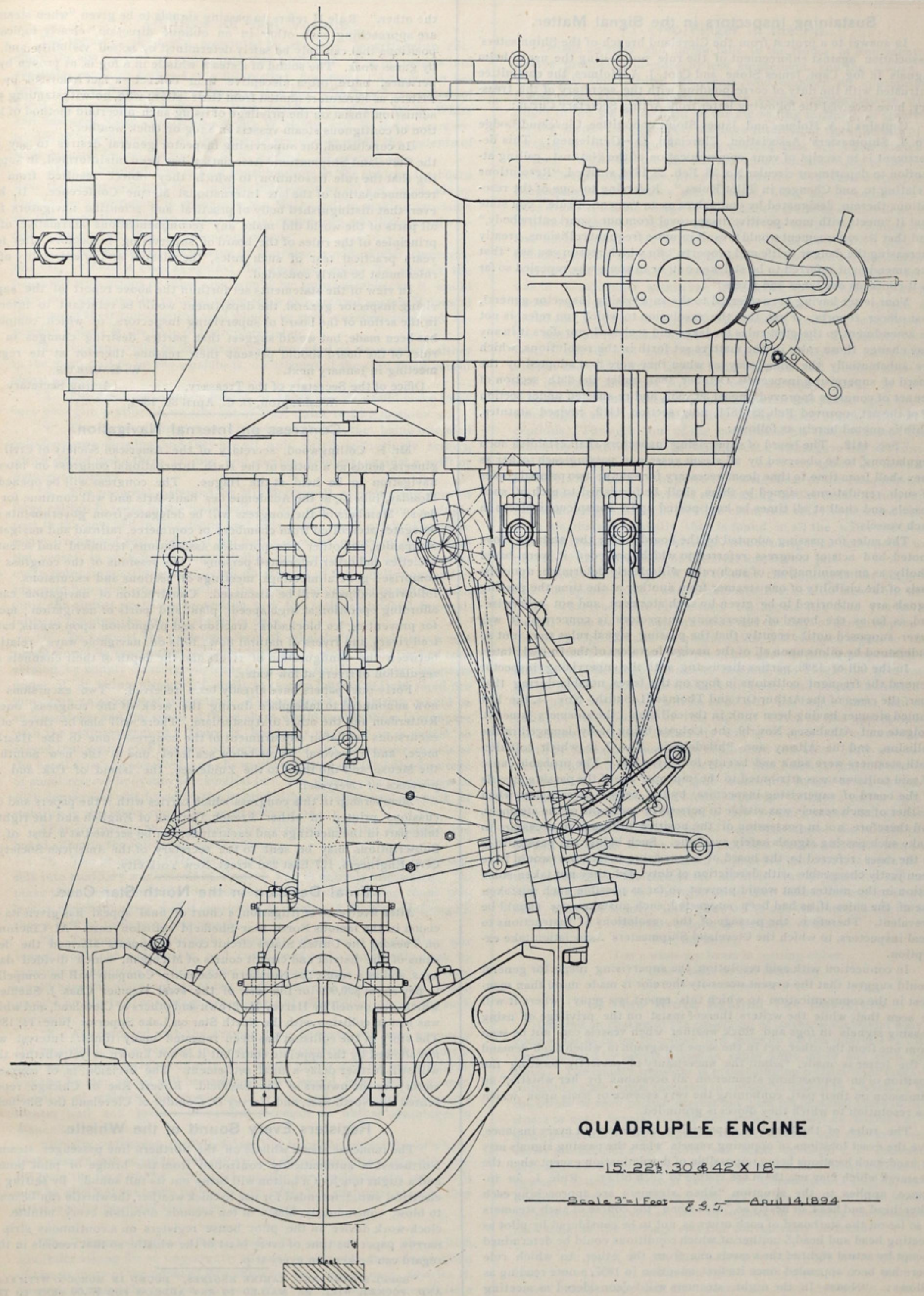
"The advantages offered by coil boilers for naval vessels may be stated," says the author, "as follows: Reduction of weight of boiler and contained water; adaption to very high pressures; safety against disastrous explosion; rapidity of raising steam; freedom from injury due to forced combustion. facility in renewal when worn out. Against these advantages is to be set greater injury by corrosion and more care required in feeding. As a matter of fact, if it were not for the trouble due to corrosion, there would be hardly anything to be said against the coil boiler, for the difficulty sometimes due to feeding is a matter of training of the attendants. A friend recently wrote me in regard to the boilers of the Monterey, where each fire room has two Ward boilers and one cylindrical: 'One feed pump can be made to supply both Ward and Scotch boiler in battery, but every chump who calls himself a water tender can't do it.' It is hardly necessary to elaborate the advantages, but it may be remarked that the reduction of weight is the greatest. For the last ten years, the demand on the designer of naval machinery for increased power on reduced weight has been growing stronger, and although forced draft does materially reduce the boiler weight, it has not been an unmixed blessing. When we reflect that coil boilers weigh less than half as much as cylindrical ones for the same power and that they can be forced to any extent without danger of injury, we see how desirable the coil boiler becomes.

"As in the case with many other improvements in steam machinery, the navy has followed rather than led outside practice. The reason for this is not hard to understand when we reflect that the officers charged with the carrying out of government work have not the free hand of those in civil life. A designing engineer frequently has unusual opportunities given him by the fact that some yacht owner demands exceptional speed, and is willing to sacrifice almost everything to attain it. Such a case would offer a splendid opening for the trial of a tubulous boiler."

Following this summary of advantages and disadvantages in these boilers, Mr. McFarland devotes a few pages to the actual experience of our own navy with launch boilers, with the boilers of the Cushing and with the competative tests leading up to the adoption of the Ward boilers in the Monterey. He notes that in a design elaborated at the bureau of steam engineering last year, coil boilers in connection with cylindrical are to be used in supplying a quadruple expansion engine. The coil boilers will furnish steam at 250 pounds to the high pressure cylinder, while the cylindrical boilers will supply steam of about 150 to 160 to the first receiver. The type of coil boilers to be used has not yet been settled, as it is the policy of the department to permit the contractors to make the selection in the first instance subject to approval.

Summing up the experience of the navy with coil boilers the writer says: "As regards lightness, rapidity of raising steam, safety against disastrous explosion and safety against injury by excessive forcing, they have given entire satisfaction. The experiments on the Ward and Cowles boilers in competition and those on the Thornycroft boilers of the Cushing and the Ward boilers on the Monterey show conclusively that coil boilers will stand any amount of forcing without injury, as these were all subjected to air pressures of 2 inches and over for long periods without a single leak being developed. We also made a severe test of a small Towne boiler at one of the navy yards, by running it for several hours under forced draft, then hauling fires as quickly as possible and turning a stream of cold water on every part of the boiler from a hose, so as to get the full effect of sudden contraction. Not a leak developed anywhere. But with regard to longevity it is as yet too early to speak, but such experience as we have had leads us to believe that with proper care to guard against corrosion they should have a reasonable life"

As against the proof of the Belleville boiler having been in use in the French navy for ten years, Mr. McFarland says that the Belleville differs very materially from the coil boilers invented in this country and all others invented abroad, in having its tubes of very large diameter and much thicker than those in any other coil boiler. The tubes are generally about four inches in diameter and the lower rows are about three-eights of an inch thick,and no tubes are less than .20 of an inch This undoubtedly accounts for the long life of these boilers,as it is manifest that a trifling bit of corrosion which would go clear through a thin tube will only affect these thick ones half as much and will still leave them serviceable for a long time. The great trouble with the Belleville boiler, compared with most other coil boilers, is its weight. We shall doubtless shortly have some valuable data in regard to this particular boiler from the experience with the fast express steamers on the great lakes which are being fitted with boilers of this type.



QUADRUPLE ENGINES FOR SCREW-STEAMER ORINDA—BUILT BY FRONTIER IRON WORKS, DETROIT, MICH.

Sustaining Inspectors in the Signal Matter.

In answer to a protest from the Cleveland branch of the Shipmasters' Association against enforcement of the rule prohibiting the use of helm signals in fog, Capt. James Stone and Capt. J. A. Holmes, the committee entrusted with the duty of corresponding with the secretary of the treasury, have received the following letter from Acting Secretary Curtis:

Captains J. A. Holmes and James Stone, committee, Cleveland Lodge No. 4, Shipmasters' Association, Cleveland, O.—Gentlemen: This department is in receipt of your communication of the 21st inst., calling attention to department circular No. 36, Feb. 28, 1894, entitled, "Resolutions Relating to, and Changes in Pilot Rules." Referring to one of the resolutions therein, designated by yourselves as an "amended rule," you state that it "meets with most positive disapproval from our (your) entire body," and that its enforcement would "result in more frequent collisions, greatly increasing the danger to life and property," for which reason you ask "that the amendment referred to be stricken out, or in some way repealed so far as it concerns our lakes and rivers."

Your letter having been referred to the supervising inspector general, that officer reports: First, that the resolution to which you refer is not an amendment to the pilot rules for lakes and seaboard, nor does it in any way change those rules in the matters set forth in the resolutions, which are substantially the same today as when they were first adopted by the board of supervising inspectors, October, 1857, under the 29th section of the act of congress approved August 30, 1852, and re-enacted under section 29 of the act approved Feb. 28, 1871, now section 4412, revised statutes, whih is quoted herein as follows:

"Sec. 4412. The board of supervising inspectors shall establish such regulations, to be observed by all steam vessels in passing each other as they shall from time to time deem necessary for safety; two printed copies of such regulations, signed by them, shall be furnished to each of such vessels, and shall at all times be kept posted up in conspicuous places in such vessels."

The rules for passing adopted by the board, under the statute above quoted, and acts of congress referred to which preceded it, were based wholly, as an examination of such rules will clearly determine, upon the basis of the visibility of one steamer from another at the time the passing signals are authorized to be given by such steamers, and not otherwise; and, as far as the board of supervising inspectors is concerned, it was never supposed until recently, that the passing signal rules were not so understood by pilots upon all of the navigable waters of the United States.

In the fall of 1893, parties discussing with the supervising inspector general the frequent collisions in fogs on the lakes, notably during that year, the cases of the Arthur Orr and Thomas H. Smith, Nov. 11, the last named steamer having been sunk in the collision; the steamers James B. Colgate and Athabasca, Nov. 10, the Colgate being badly damaged in the collision, and the Albany and Philadelphia, Nov. 7, in which collision both steamers were sunk and twenty-four lives lost. The probable cause of said collisions was attributed to the improper use of the passing signals of the board of supervising inspectors, by the vessels in collision, when neither of such vessels was visible to persons in command of the steamers, and therefore not in possession of the positive information necessary to make such passing signals safely available. Such being the possibilities in the cases referred to, the board of supervising inspectors would have been justly chargeable with dereliction of duty, had they not taken some action in the matter that would prevent, so far as possible, such mistaken use of the rules, if, as had been suggested, such mistaken use should be prevalent. Therefore, the passage of the resolutions of instructions to local inspectors, to which the Cleveland Shipmasters' Association take exception.

In connection with said resolution, the supervising inspector general would suggest that the urgent necessity therefor is made more than manifest in the communication to which this report is a reply; where it will be seen that, while the writers thereof insist on the privilege of using passing signals in fogs and thick weather when vessels can not be seen from one from the other, yet in the same paragraph in which such demand in the letter is made, "admit the uncertainty of perfectly locating the position of an approaching steamer on all occasions by her whistle," an admission on their part containing the very essence or basis upon which the resolution to which they object is grounded.

The rules of the board of supervising inspectors, in every instance, give the exact locations of opposing vessels when the passing signals may be used, such locations being impossible of determination except when the steamers which may use them are visible to each other. Rule I, for instance, applies to the situation "when steamers are approaching each other 'head and head' or nearly so," also when "the course of such steamers is so far on the starboard of each other as not to be considered by pilot as meeting head and head;" neither of which conditions could be determined except by actual sight of the vessels one from the other, to which rule there has been appended since its first adoption in 1857, a note reading as follows: "NOTE—In the night, steamers will be considered as meeting 'head and head' so long as both the colored lights of each are in view of the other." Rule II refers to passing signals to be given "when steamers are approaching each other in an oblique direction," clearly indicating positions that can only be safely determined by actual visibility and not by guess work. The sound of a steam whistle in a fog is, as proven by experience, more often deceptive than correct—a fact admitted by the writers, as heretofore quoted from their letter; who, notwithstanding such admission, insist on the privilege of using such uncertain method of location of contiguous steam vessels in a fog or thick weather.

In conclusion, the supervising inspector general desires to say that the Cleveland Shipmasters' Association has been misinformed, in supposing that the rule (resolution) to which they object resulted from any recommendation of the late International Marine Conference. If, however, that distinguished body of practical and scientific navigators from all parts of the world did make any recommendations affirmative of the principles of the rules of the board of supervising inspectors, after forty years practical test of such rules, the wisdom and practicability of the rules must be fairly conceded.

In view of the statements set forth in the above report of the supervising inspector general, the department would be reluctant to interfere in the action of the board of supervising inspectors, of which complaint has been made, but would suggest that parties desiring changes in the rules of the board should present their reasons therefor at its regular meeting in January next.

W. E. CURTIS,
Acting Secretary.

Office of the Secretary of the Treasury,
Washington, D. C., April 30, 1894.

Congress on Internal Navigation.

Mr. F. Collingwood, secretary of the American Society of Civil Engineers, sends us a notice of the sixth international congress on internal navigation to be held at the Hague. The congress will be opened on Monday, July 23, at the Adademie des Baux-Arts and will continue for six days. Members of the congress will be delegates from governments and delegates accredited from chambers of commerce, railroad and navigation companies, and other transportation associations, technical and scientific societies and other interested persons The sessions of the congress will comprise—general meetings, meetings of sections and excursions. The following subjects will be discussed: Construction of navigation canals affording operation at high speed; plant and ports of navigation; means for preventing ice blockades; traction and propulsion upon canals, canalized rivers, and rivers of natural flow; tolls on navigable ways; relations between the configuration of rivers and the depth of their channels and regulation of rivers at low water.

Forty-one papers have already been received. Two excursions are now announced to take place during the week of the congress, one to Rotterdam and the other to Amsterdam. There will also be three other excursions held after adjournment of the congress—one to the Haarlem mere, and to several places below sea level; one to the new mouth of the Meuse, and the third to the Zuiderzee, the Island of Urk and the province of Overyssel.

Membership in this congress which carries with it the papers and discussions printed in either French, German or English and the right to take part in the meetings and excursions, can be secured at a cost of $5. Subscriptions may be sent to the secretary of the American Society of Civil Engineers, 127 East 23d street, New York city.

Final Decision in the North Star Case.

After five years of litigation, a court of final appeal has given its decision in the famous North Star-Sheffield collision case. At Cincinnati on Tuesday the United States circuit court of appeals affirmed the decisions of the district and circuit courts of Michigan, which divided damages, and as a result the Northern Steamship Company will be compelled to pay about $90,000 for the loss of the steel steamer Chas. J. Sheffield, which was owned by Harvey H. Brown and others of Cleveland, and which was lost in collision with the North Star on Lake Superior June 14, 1889. The story of the collision has been repeated many times. Interest was not allowed by the appelate court but it is not known as yet whether this will still further delay a final settlement. The decision is, of course, a victory for the owners of the Sheffield. Robert Rae of Chicago represented the North Star, and Harvey D. Goulder of Cleveland the Sheffield.

Registers Every Sound of the Whistle.

The immense steam whistle on the Northern line passenger steamer Northwest is automatically controlled from the bridge or pilot house, and a slight touch of a button will bring out its full sound. By setting an electrical switch intended for use in thick weather, the whistle can be made to blow, continuously, blasts of ten seconds duration every minute. A clock-work device in the pilot house registers on a continuous strip of narrow paper the time of every blast of the whistle, so that records in this regard can be kept on every trip.

"ROPER'S LAND AND MARINE ENGINES," BOUND IN MOROCCO WITH FLAE AND POCKET, WILL BE MAILED TO ANY ADDRESS FOR $3.50 SENT TO THE MARINE REVIEW, CLEVELAND, O.

Unfitted for War Vessels.

The report of the board appointed by the navy department to consider the advisability of converting the whaleback type of vessels into auxiliary war ships makes a very interesting document. A copy of it has been received from Acting Secretary McAddo. The board consisted of Lieut. Commander C. L. Sperry, Past Assistant Engineer W. W. White and Assistant Naval Constructor Frank W. Hibbs, and its duties were extended to an examination of the type of vessel covered by the patents of Rear Admiral Daniel Ammen, U. S. N., retired. The report says:

"After a thorough and careful consideration os the subject, the board have the honor to report that, in their opinion, it would not be of advantage to the government to encourage Mr. McDougall in making provision for the adaptation of these vessels to conversion into auxiliary naval vessels in time of war, for the following reasons:

"1. The extremely low reserve of buoyancy would render these vessels very vulnerabe, even as against the smallest guns. To protect the buoyancy with armor or otherwise, would be impracticable, as it would materially decrease the value of these ships as merchant vessels if done at the time of their construction, and would be very uneconomical and expensive if done at the time of their conversion.

"2. No guns could be advantageously mounted on these vessels,either in the main hull or on the whaleback, on account of the very small height above water.

"3. The great metacentric height of these vessels would make them very poor gun-platforms, on account of their quick rolling motions.

"4. The speed of these vessels is necessarily low, they being intended only for cargo carrying, and they are all only fitted with single screws, which would make them clumsy and almost helpless against a swift or numerous enemy.

"5. The proposal, patented by Mr. McDougall, of mounting guns of large calibre in pairs in the main hull, to fire alternately from a single port in the bow and in line of the keel only,with a small patch of portable armor (composed partly of steel and partly of wood) placed on the stem of the vessel, is manifestly impracticable, presenting as it does in almost every point impossibilities of detail on account of the small room and in adequate buoyancy and strength in the bow to mount, secure and fire such guns, the almost worthless protection, and the well-established impossibility of training the gun by the helm only.

"6. To convert the passenger form of whaleback vessel into a war vessel would be practicable, with but little extra work at the time of conversion, by simply clearing the texas deck and building metal supports under it (it being already of stell) to carry a battery of light rapid fire guns with no attempt at protection. The height of the battery would be an advantage, and the speed of these ships would enable them to compare with the ordinary cruiser. There is, however, no point in a vessel so armed that would give her any advantage over the passenger vessels of the usual type so converted, and she would still have the fatal disadvantage of small reserve buoyancy so essential in a war vessel. No objection to such conversion was found on the ground either of structural strength, of stability in the intact condition, or of propulsion.

After comparing the whaleback type of vessel with the Katahdin the board submits the following conclusions:

"1. The proposal of Mr. McDougall to convert whaleback cargo vessels into auxiliary war vessels in time of war, is entirely impractical. To make these vessels suitable for such conversion would render them useless as merchant ships, and if converted, as proposed by Mr. McDougall, they would be useless as war vessels.

"2. To convert a whaleback passenger vessel into an auxiliary war vessel would be practicable, and could be cheaply and rapidly done, by mounting numerous rapid-fire guns on the texas deck, but such a vessel would have the disadvantage of too small reserve of buoyancy and would possess no practical advantage over vessels of the ordinary types for such purposes.

"3. As compared with the Ammen type of vessel for war purposes the whaleback has advantage in economy of construction and maintenance and in dead weight capacity, and would give a steadier gun platform; but the Ammen vessel will be easier to drive, would have better characteristics of stability for purposes of a ram, and would probably have a lighter hull and greater structural strength, as well as advantages in manoeuvring powers.

"Finally—Although the board does not favor the conversion of whaleback vessels into auxiliary war vessels nor the construction of a war vessel from the type of the whaleback except for purposes of a ram, yet it may be said that for cargo purposes and even for passener vessels they possess many practical and useful advantages."

The Cramps addressed a letter, under date of April 1, to the British admiralty asking for an opportunity to make tenders for the construction of two or more of the poposed new ships for the English navy. Charles H. Cramp expressed the opinion, however, that public opinon in Great Britain would not uphold a ministry in awarding work to any foreign ship yard.

No Finger in the Pie.

Debate on river and harbor bills in the House of Representatives is always productive of more or less amusement. and the stories that are told about the German statesman who opposed an appropriation for Goose creek and the numerous back-woods' representatives who get a finger in the pie on account of the log-rolling methods of securing votes for the measure are probably no more interesting than the bits of wit and sarcasm of more dignified congressmen that are often buried in the Record. While the present bill was under consideration in the house last week, Congressman Ray, who represents the New York district in which Binghampton and Ithica are situated, made an appropriation for Cos Cove Harbor, a little village at the side of a creek in Connecticut, the basis of quite a laughable speech treating of the method of dealing out river and harbor funds. He criticized the bill, he said, with a deep sense of personal wrong, for while $658,000 was appropriated for the improvement of rivers and harbors in the Empire state,not a single penny of the money was to be expended within the boundaries of his district. He had the honor to represent a district which contained 216,000 people and the proud and progressive city of Binghampton, and that other city, known the world over, Ithaca, where is situated Cornell University, one of the first, if not the first institution of learning known to civilization. His district had rugged and alpine hills, beautiful and fruitful valleys; broad and beautiful meadows, rich and valuable timber lands. In the city of Binghampton alone there was manufactured and placed upon the market more cigars than in any other place in the United States, with but two exceptions. Through four of the counties of his district flowed that magnificently beautiful river the Susquehanna, which gave life to Pennsylvania and made Harrisburg what she is. Ten years ago he he had asked for $100,000 with which to improve the navigation of the Susquehanna above the Pennsylvania line but was still waiting for the funds. And yet it would not be an exaggeration, he held, to claim that this river carried more water from his district annually than is found in all the water courses in the states of Alabama and Mississippi, whose navigation is proposed to be improved by the provisions of the river and harbor bill.

"Give to the people of my district the appropriation suggested by me," the speaker said, "and steamboats from central New York will bring to the wharves of this city a more toothsome fish than you have as yet tasted. Give us this appropriation and the city of Binghampton, having the advantage of water communication, will cheapen cigars to the members of this house at least 25 per cent.; give us this appropriation and the farmers of Chenango, Delaware, Broome, and Tioga will give you grass-grown butter made from the milk of Jersey and Devon cows such as you have never tasted, and will do away with the bogus butter and oleomargarine in the basement of this capitol. Give us this appropriation and the shades of Cornell University will be as open and as accessible to the youth of America as are those of Harvard and Yale. And now in conclusion, Mr. Chairman, permit me to say that I find in this bill one redeeming feature. There is one spot somewhere in the broad domain of the United States the mention of which always touches a tender spot in my heart. Its mention produces in my bosom a sweet melody like to the music produced by the playing of angel hands upon the strings of golden harps. I learned to love it in my earliest childhood, and when I read in this bill that $3,000 is to be used to improve that river, it made me forgive the members of the committee all their sins of omission and commission, and advocate the enrollment of their names among those who love story, song and home. That place is the one indicated in the old song:

'Way down upon de Suwanee ribber,
Far, far away;
Dar's whar my heart is turning ebber,
Dar's whar de old folks stay.'"

A New Move Against Tax Gatherers.

Officials in charge of the collection of taxes in Cleveland have of late gone so far as to try to collect back taxes on partial interests in Cleveland vessels owned by people living in other Ohio cities and even in other states. The county treasurer is proceeding on a claim that taxes can be collected on all partial interests in vessels managed in Cleveland whether the owner of such partial interest has paid his personal taxes in full elsewhere or not. Several vessels were delayed in port on account of attachment proceedings begun against small interests, and the taxes were paid under protest, but a new move was made by Capt. C. E. Benham, a few days ago, when his steamer, H. B. Tuttle, was tied up on a claim for taxes against a sixteenth interest held by W. A. Robinson of Dayton, O. Capt. Benham immediately brought suit against the treasurer for $1,000 damages for detention, etc., and secured an injunction releasing the steamer until such time as the damage suit can conveniently be heard.

IF YOU SEND $1 TO THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, O., FOR FOUR STEEL ENGRAVINGS OF U. S. WAR SHIPS, ON HEAVY CARD, AND ARE NOT SATISFIED WITH THEM, WE WILL REFUND THE MONEY.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O
Chicago office, (branch), No. 726 Phoenix building.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,761 vessels, of 1,261,067.22 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1893, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was, on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1893, was as follows:

Class.	Number.	Gross. Tonnage.
Steam vessels	1,731	828,702.29
Sailing vessels	1,205	317,789.37
Canal boats	743	76,843.57
Barges	82	37,731.99
Total	3,761	1,261,067.22

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
1889	225	107,080.30
1890	218	108,515.00
1891	204	111,856.45
1892	169	45,168.98
1893	175	99,271.24
Total	991	471,891.97

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1893	1892.	1891.	1893.	1892.	1891.
No. vessel passages	12,008	12,580	10,191	3,341	3,559	4,207
Ton'ge, net regist'd	9,849,754	10,647,203	8,400,685	7,659,068	7,712,028	8,698,777
Days of navigation..	219	223	225	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

BEFORE the committee on immigration and naturalization in the House of Representatives there is now pending a bill, of which the following is one paragraph, section 7: "That sailors and deckhands working on American vessels plying on our great lakes shall be citizens of or permanently domiciled in the United States six months prior to their working or engagement on said American vessels. The master or owner of said vessels shall be and are hereby held responsible for the employment of all hands to man and work on said American vessel or vessels, and any master or owner of said American vessel or vessels permitting the working on said American vessel or vessels of any alien who had not been permanently domiciled in the United States six months prior to such working or employment, shall be deemed guilty of a misdemeanor and shall on conviction, be fined in the sum of not more than $500 nor less than $300 or by a term of imprisonment not exceeding one year and not less than six months for every such offense." It will readily be seen that the section of the bill just quoted applies solely to sailors and deckhands on American vessels plying on the great lakes. Truly this is legislation against the vessel interests with a vengeance. With ship's officers in the merchant service there are, of course, several good reasons for the government requiring that they should be American citizens, but there is no reason apparent why a vessel owner should not have the same choice of ordinary employes as a man engaged in manufacturing or other business. Why lake vessel owners should be singled out for special restrictions, it is difficult to understand. The most outrageous portion of this section is that part of it which provides that a lake vessel owner may be punished by imprisonment for the employment of sailors or deck hands on his vessel who have not been perfectly domiciled in the United States for six months prior to their engagement. Under this clause every vessel owner on the lakes could be sent to state's prison, as none of them have any possible way of telling whether the deckhands employed by them have been domiciled in the United States for six months or not—in fact, the owner has nothing to do with their employment. It is hardly possible that this bill in its present form can pass either the house or the senate, if the attention of lake representatives is directed to it in a proper way. There is danger, however, of a favorable report upon it from the committee to which it has been referred, and although it will receive the attention of the officers of the Lake Carriers' Association in committee, all members should also write their representatives about it.

IN another part of this issue there is printed a letter from W. E. Curtis acting secretary of the treasury to the Cleveland branch of the Shipmasters' Association, in answer to the protest of that body against the ruling that passing signals are not to be blown unless vessels are in sight of each other. The answer from the secretary of the treasury upholds, of course, the supervising inspectors in this matter, as it is in reality an answer from the supervising inspector general, and is simply transmitted through the department head. In substance the inspector general says there is nothing new about the resolutions adopted at the last meeting of the board, and which were such a surprise to the shipping fraternity on the lakes. They simply call attention, he says, to the law as it has existed practically since the organization of the steamboat inspection service. He merely tells vessel masters to look over the "pilot rules for lakes and seaboard," which they have studied so carefully for these many years, and they will find, according to the construction he puts upon them, that the use of helm sigals in fog has never been permissable under these rules. Everybody knows that there is not in these pilot rules for lake and seaboard a plain statement that helm signals shall not be used in fog, but the inspector general holds that as, by diagrams and otherwise, there is given the exact locations of opposing vessels when the passing signals may be used, it follows that such locations would be impossible of determination except when the steamers which may use them are visible to each other. Now this is certainly a far-fetched conclusion but let it pass for the present, as it may be that if such a construction is put upon the law generally the results will be for the benefit of life and property. But the strange feature of the whole matter to one judging not as to the right or wrong of helm signals in fog is the fact that for all time since the government has made laws for the navigators of steam vessels the masters of such vessels on the lakes have blown these signals in thick weather. The use of these signals in fog have been a part of the testimony in collision cases almost without exception and have entered into all kinds of litigation that is discussed in the public prints; Gen. Dumont has held his present position in the board for upwards of twenty years and some of the supervising inspectors have been there through several terms; and yet not until this late day has the steamboat inspection service pronounced such use of these signals illegal in language that can be understood by ordinary people. It is safe to say that before the adoption of the resolution referred to there could not be found on the chain of lakes a supervising or local inspector who had any thought of the law prohibiting the use of passing signals when vessels were not in sight of each other, and again it is in order to ask when will vessel owners give this board the attention demanded by its close connection with their interests.

THE weather bureau has had an officer study the stages of water in the St. Mary's Falls canal, as recorded by the war department, in connection with observations of atmospheric pressure and wind direction and force at points on Lakes Superior and Huron, and he finds that changes in the available depth of water in the canal are intimately associated with fluctuations in atmospheric pressure. As a result, Chief Harrington announces in a circular that a marked increase in the available depth attends the passage over Lake Superior of areas of low barometric pressure, and a decrease in depth generally occurs with the passage of high areas over the northern lake region. The wind direction and force are not, he says, active agents in producing the changes in the stage of water, but are incidental to the passage of low and high areas. Forecasts of increases in the stage of water in the canal must, therefore, be based upon the movements of low areas which appear west of Lake Superior, and forecasts of falls in the water level can be made when the stage of the water is above the average and an area of high barometer is advancing towards the upper lakes. The object of this investigation has been to ascertain whether it is practicable to make forecasts of changes in the stage of the water in the canal and the circular intimates that from barometer readings in Manitoba and Minnesota a change of quarter of a foot might be predicted twenty-four hours in advance. From a scientific standpoint this work is deserving of encouragement, although there are grave doubts among vessel men as to any practical benefit being derived from predictions based on the results of investigations as far as they have gone. Mr. Harrington says nothing of the intentions of the bureau as regards actual forecasts of this kind.

MR. JOHN GORDON, general manager of the Northern Steamship Co., can also be counted among those who look for profitable freights for wild carriers on the lakes during the closing months of the present season. In a conversation on the subject during the trial of the Northwest, Monday, he cited the several arguments favoring higher freights that have been advanced on account of the delay in moving coal and ore, and added that in all his experience he had never seen a season open like the present one that did not close with profitable freight rates.

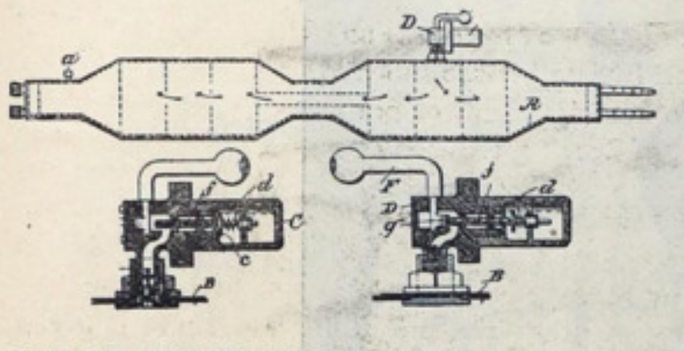
Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

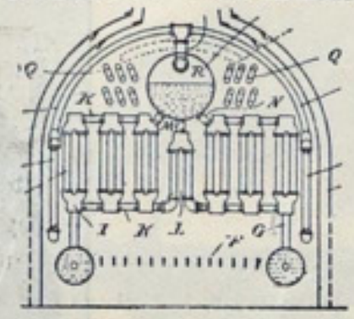
519,242. AUTOMATIC LIFE PRESERVER, BUOY, &c. Antoine Colomes, Clermont-Ferand, France. Filed Nov. 8, 1893. Serial No. 490,336. (No model.)

Claim.—The combination with the collapsible inflation chamber, of a cartridge containing a liquefiable inflating medium, and provided with a self-closing valve for confining the charge in the cartridge, a coupling connecting the chamber and cartridge and having a communicating passage therethrough from one to the other, and a lever and connections under control of the operator for opening the valve.

519,242. AUTOMATIC LIFE-PRESERVER, BUOY, &c.



519,059. STEAM-GENERATOR.



519,059. STEAM GENERATOR. Alexander W. Finlayson, Detroit, Mich., assignor, by mesne assignments, of two-thirds to the Finlayson Boiler Company, Limited, same place. Filed Nov. 14, 1893. Serial No. 490 919. (No model.)

Claim.—In a steam generator, the combination with the water legs at each end, a steam dome connecting the legs centrally at the top and the water tubes connecting the legs at each side at the bottom, the circulating pipes connecting the side tubes with a steam dome and superheating coils arranged outside of said circulating pipes and within the casing, and connections at opposite ends of said coils with the steam dome and the steam supply pipe respectively.

Ruling Regarding Measurements for Tonnage.

A question was raised at Grand Haven, Mich., some weeks ago regarding the manner in which one of the deputy collectors of customs measured for tonnage the steamer Charles West. The matter was brought to the attention of the commissioner of navigation, and that officer thus passes upon it in a letter to the collector at Grand Haven, which is printed in the latest collection of treasury department decisions:

"The vessel has a second deck, the space between which and the deck below, is inclosed at the sides only about half her length, the residue of the upper deck extending aft being supported by stanchions bearing directly on the frame timbers of the hull, and the space below not being boarded at the sides. Mr. Thompson, your admeasurer, considered the space between the upper and the deck below as a between decks, and measured and reported the tonnage accordingly. To this report, the owner of the vessel objects, on the ground that the tonnage so stated was excessive. On inquiry it is found that the admeasurer's action was in accordance with the practice at the port of New York, the collector of which port transmits a statement from the acting surveyor to the effect that Mr. Thompson's admeasurement was 'entirely correct in principle,' and that the fact that the between decks is not entirely closed on the sides does not exempt it from admeasurement, the 'closed-in spaces' referred to in the law and regulations relating to admeasurements, being "closed-in spaces above the deck to the hull.' Your decision is affirmed."

Dominion Government Opposed to 20-Foot Canals.

In Canada, as in this country, the demand for a deep-water outlet from the lakes to the Atlantic seaboard is strongest in northwestern sections. When this subject was before the dominion parliament a few days ago, the representatives of the Manitoba district were loudest in support of the proposition to enlarge the St. Lawrence canal system to 20 instead of 14 feet, but the intimation of such a change again brought out an expression from Mr. Haggart, minister of railways and canals, that shows how firmly the government is set against any alteration of the 14-foot scheme, which has been so long under way. Referring to the claim that with 20 feet of water throughout the canals there would be an interchange of ocean and lake vessels navigating both the salt and fresh water bodies, the minister said that many of the ocean-going vessels draw more than 20 feet, and even if it would be possible for them to navigate the deepened canals, he was told by those who were best acquainted with the subject that it would be more profitable for them not to go beyond Montreal. The ocean vessels employed so many men, and it cost so much to navigate them, besides the dangers of damages, that it would pay them better to transship their cargoes to other vessels to distribute them to the upper ports.

Coming to the question of cost, he said that the officers in his department had estimated that to deepen the canals between Montreal and Lake Ontario would cost $60,000,000. From that they might take the $12,000,000 which is to be expended in completing the system as at present proposed, to 14 feet. This would leave an expenditure of $48,000,000. After that it would be necessary to deepen every harbor in Lake Ontario from Kingstou to Welland to 20 feet from their present depth of 14 feet. The supporters of the proposition only contemplated taking the deepened canals to Lake Ontario. They were leaving it to the government to decide then whether to adopt the Welland canal or the proposed Georgian bay canal as the route by which to reach the upper lakes. If the government decided to deepen the Welland canal it would cost $30,000,000, and after that was done he did not think there was a harbor between that and Port Arthur having 20 feet of water. Altogether it would require an expenditure of $78,000,000 to $90,000,000, independent of the deeping of the harbors. There was also the other question of the effect which the deepening of the canals to 20 feet might have upon lowering the water in Lake Ontario. The government might render itself liable to damages which would dwarf the expenditures upon the canals themselves. There were no arrangements which he had heard, the minister concluded, which justified embarking upon this vast enterprise.

In General.

A fourth vessel of the turret deck type, whaleback like, has been launched by William Doxford & Sons of Sunderland, Eng. The vessel was built on contract for English ship owners and has a dead-weight capacity of 3,800 tons.

James Gordon Bennett who failed in an effort to purchase the famous yacht Vigilant, which was sold to the Gonlds, has given an order to the Herreshoffs of Bristol, R. I., to build him a yacht which they must guarantee shall be faster than the Vigilant. The boat is to be constructed of Tobin bronze.

At the last meeting of the English stockholders of the Otis Steel Company of Cleveland, one of the stockholders, a Mr. Squire, said that the promoters of the sale of the works had made £78,000 out of the transaction. The works were well sold, he said, and poorly bought, the concern being hugely overcapitalized.

At the works of the W. & A. Fletcher Company, New York, three compound engines are being fitted to a triple-screw steamer 141 feet long, which was recently built on the Hudson a short distance above New York city, by Augustus Mackenzie, who is interested in excursion boats in New York harbor. The cylinders of the engines are 11 and 23 inches diameter by 14 inches stroke.

At the entrance to Boston harbor an experiment is being made by the United States light house service with the Mahan system of flashing numbers to distinguish lights. This light will show by series of flashes 1—4—3 every thirty seconds, and if it works satisfactorily all the other lights will be similarly set to flash numbers grading in order from the most easterly on the Maine coast southward.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on May 5, 1894:

	Wheat, bu.	Corn, bu.
Chicago	19,774,000	4,762,000
Duluth	9,906,000	282,000
Milwaukee	985,000	3,000
Detroit	1,877,000	29,000
Toledo	2,750,000	303,000
Buffalo	1,916,000	614,000
Total	37,208,000	5,993,000

At the points named there is a net decrease for the week of 1,793,000 bushels of wheat and 907,000 bushels of corn.

St. Mary's Falls Canal Traffic.

The St. Mary's Falls canal traffic during fourteen days of last month (the canal opened on April 17), amounted to 195,505 net tons, of which 128,156 tons was eastbound and 67,349 tons westbound. In 1893 the canal did not open until May 1. The traffic during April this year was divided as follows:

ST. MARY'S FALLS CANAL TRAFFIC DURING FOURTEEN DAYS IN APRIL, 1894.

Eastbound.			Westbound.		
Items.	Designation.	Amount.	Items.	Designation.	Amount.
Copper	Net tons	658	Coal, anthracite	Net tons	27,398
Corn	Bushels	163,300	" bitumin's	"	31,052
Flour	Barrels.	302,480	Flour	Barrels	36
Iron Ore	M. ft. B M.	56,501	Maufat'd iron	Net tons	133
Lumber	Bushels	1,159	Salt	Barrels	3,000
Wheat	Wheat	921,466	Unclassified frt.	Net tons	8,311
Unclassified frt.	Net tons	6,586	Passengers	Number	108
Passengers	Number	48			

Around the Lakes.

Capt. George Young, retired vessel master of Cleveland, died on Friday last. The death of Capt. F. W. Barnes of Muskegon was also announced last week.

The nun buoy mark Eleven-Foot shoal off Point Peninsula, north end of Green bay, was adrift during the early part of this week, but preparations were being made to replace it as soon as possible.

John Gates and John Urig of Avon, O., have sold three-fourths of the schooner H. G. Cleveland to Frank James of Cleveland and William Randall of Lorain, O., on a basis of $2,500 for the entire boat.

About May 15, 1894, the intensity of the light at Whitefish point light station, Lake Superior, will be increased by the substitution of a second-order burner for the third-order burner now in use.

On a mean draft of about 16 feet the steamer Susquehanna took out of Chicago Wednesday a package freight cargo weighing 3,067 tons. This is probably the largest cargo of package freight ever carried on the lakes.

Buffalo vessel owners seem to think that Capt. M. Galvin of the brokerage firm of Galvin, Clark & Boland will be appointed supervising inspector of steam vessels in the ninth district, to succeed Alexander McMasters.

Toledo tug owners have again pooled their interests, with L. S. Sullivan as president of the combination. They propose to charge last season's rates, with 10 per cent reduction on bills paid before thirty days have expired.

Capt. Alex. Begg, P. C. Smith and others of Bay City will own the wooden steamer to be built by F. W. Wheeler & Co. She will carry about 6' 0,000 feet of lumber, and will be sailed by Capt. Begg, who was in the steamer Doty last season.

William Bishop & Son, 205 South street, New York, call attention to their advertisement in which it is stated that their water closets can be put in space of 15 by 15 inches Through an error this read 65 by 15 inchee, but any ship builder knows that the Bishop closets do not take up that much room.

The Escanaba Towing and Wrecking Company is now better equipped for rendering assistance to craft in distress than ever before. Capt. Bartlay, who has command of the powerful wrecker Monarch, is always ready to respond to any and all calls for help that may be sent in by wire or otherwise.—Exchange.

Iron was first used in the construction of vessels in 1777 for a pleasure boat launched on the River Foss, Yorkshire, and the first experimental steam engine built in America was made in Philadelphia in 1773 by Christopher Collis. The first iron steamship was built in 1830 and the first engine on this continent was brought from England in 1753.

Grampian is the name given by Capt. James Davidson of West Bay City to the fifty-second boat launched at his yard on Saturday last. She is a schooner of 220 feet keel, 38 feet beam and fourteen feet hold and is expected to carry about 1,500,000 feet of lumber or 2,000 tons of ore. The name is taken from the famous hills of Scotland.

Pickands, Mather & Co. are having built in Cleveland a fuel barge that is intended specially for fueling the big Northern Line passenger steamers at Buffalo. The barge or scow was launched a few days ago and will be in service shortly. It is 180 feet long and 32 feet wide, having capacity for 120 five-ton buckets—600 tons in all. With the aid of one of the big cranes manufactured by the McMyler Manufacturing Company of Cleveland, this quantity of fuel can be put aboard a steamer in a few hours.

A company known as the St. Lawrence and Chicago Steam Navigation Company, Limited, with headquarters in Toronto, now controls the Canadian steamers Algonquin and Rosedale. The Algonquin was formerly managed by Thomas Marks & Co. of Port Arthur and the Rosedale by Hagarty & Co. of Toronto. W. D. Mathews of Toronto, one of the directors of the Canadian Pacific Railway, is president of the new company and John H. G. Hagarty secretary and treasurer. These gentlemen with Capt. Crangle, Thomas Marks, George T. Marks and F. W. Kingston constitute the board of directors. A reduction in cost of management is the main cause of the combination.

A party of Chicago people, headed by Dr. W. C. Ransom, are preparing for a trip around the world in the schooner George Wren. The boat will be prepared for the voyage, which it is expected will last about three years. Articles for a museum will be picked up and the collection exhibited, with a charge for admission, upon return of the boat to the lakes. The route to be taken will be down the St. Lawrence and around Cape Horn to the Pacific, when the coast will be followed to Alaska. All the islands of the Pacific will be stopped at, and the Australasia will be visited. Continuing their voyage the party will then go to the coast of Africa and round the Cape of Good Hope and north to the Straits of Gibraltar. The Mediterranean will be explored, also the holy land. It is claimed that the boat will make more ports than any other vessel on one cruise.

An Improved Life Preserver.

The illustration shows a life preserver made by George Learman of Cleveland, who has patented several devices for use aboard ship. A rubber hood with glass eyelids and an opening on top is made a part of an ordinary cork jacket. Mr. Learman claims that loss of life in heavy seas and

in surf is very often not from drowning but from smothering, caused by the force of water splashing in the face of the victim. He has made several trials of this device and claims that it can be worn with little more inconvenience than the ordinary life preserver.

Partial Victory Against Big Rafts

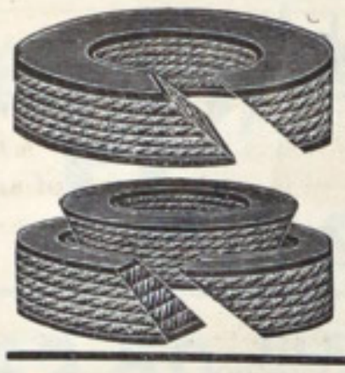
As passed by the house on Saturday last, the river and harbor bill carries the regulations for raft towing on the lakes, just as they were recommended by the commission of army engineers. Appropriations in the bill are also substantially as they were reported from the committee. It may be that the Michigan representatives of lumber districts, who have enlisted the support of congressmen from Superior and Duluth against the raft towing regulations, will manage to stir up a strong opposition in the senate, where Gen. Alger was successful in a previous fight against restrictions in the rafting business. The measure will still stand careful watching from vessel owners. Objection from the head of the lakes comes from lumber firms engaged in rafting logs into Superior and St. Louis bays.

Trade Notes.

We are indebted to Harvey C Beeson of Detroit for a copy of Beeson's Inland Marine Directory for 1894. The work shows some improvement over previous issues, notably in the addition of a list of Canadian vessels.

The Bethlehem Iron Company of South Bethlem, Pa., has of late been giving some attention to business on the lakes, and any of the several large ship and engine builders having orders to place will find it to their advantage to communicate with this big concern, which has a national reputation for high-grade work in forgings, steel castings, etc.

Horace See of No. 1 Broadway, New York, sends us some circulars containing interesting data regarding the Yarrow water tube boiler, for which he is agent in this country. This is the boiler adopted for the first of the famous torpedo boat chasers being built for the British government. One of the circulars places the weight of Yarrow boilers in the torpedo boat chaser Hornet, which made 28 knots on trial, at 43 tons for 4,300 horse power, as against a weight of 362 tons for Belleville boilers supplying steam for 7,500 horse power.



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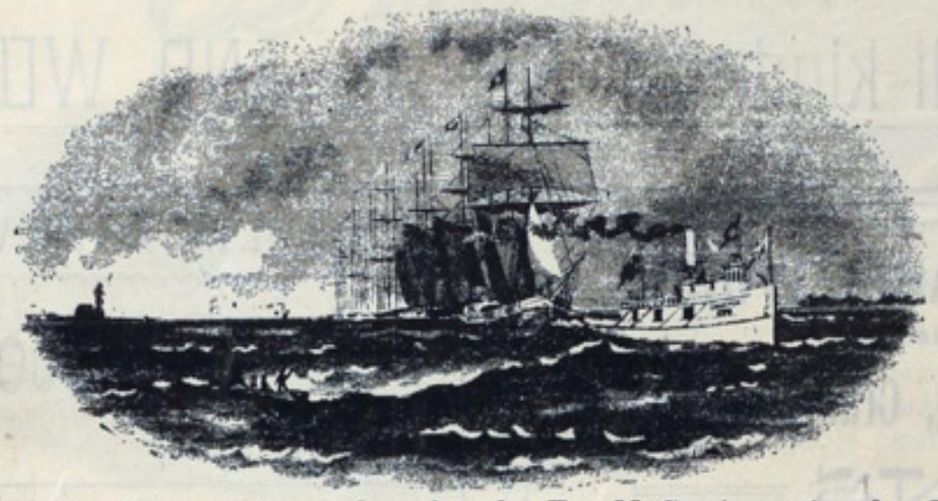

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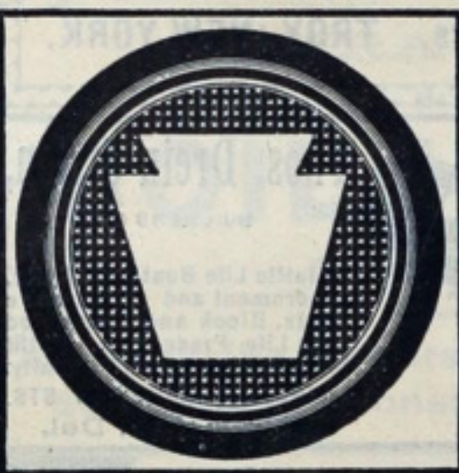

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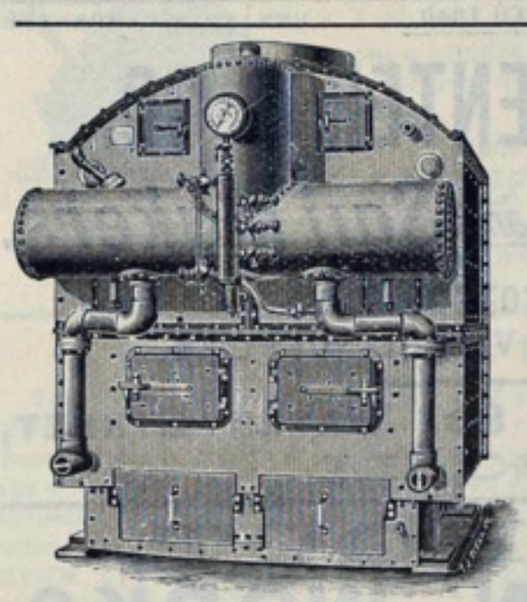

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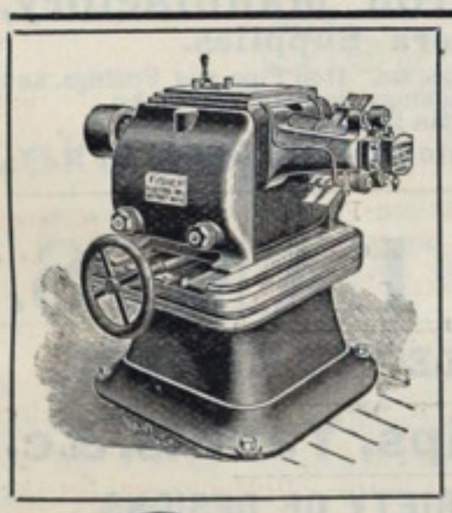

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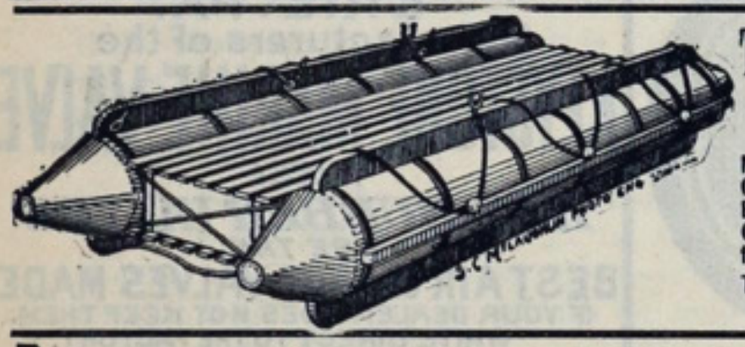

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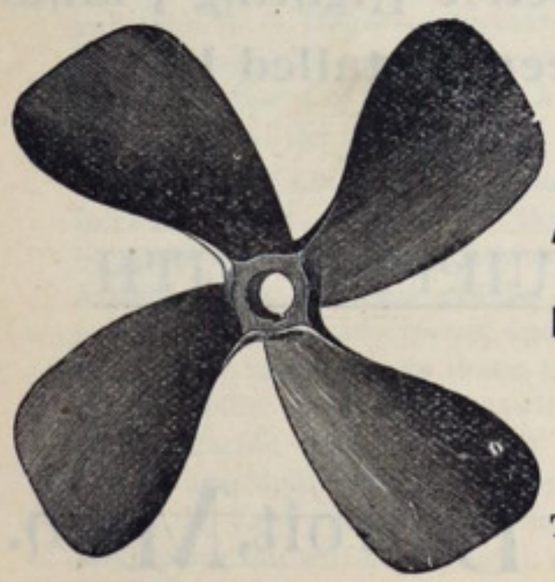

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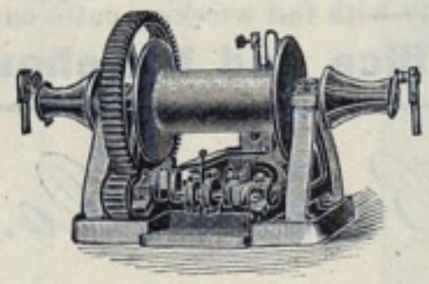

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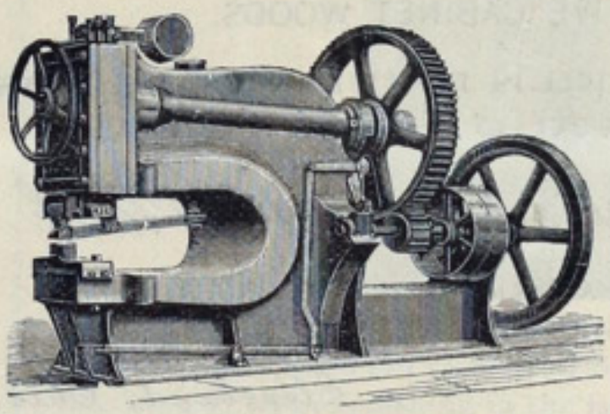

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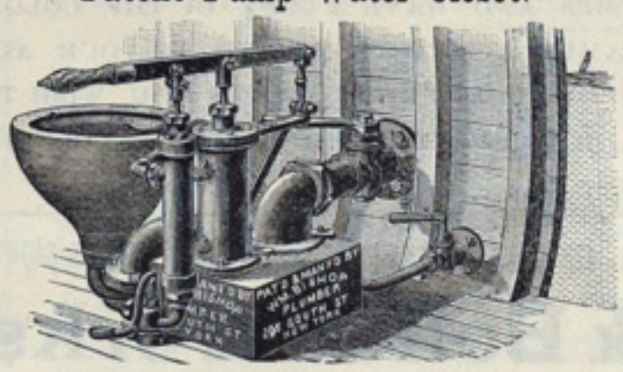

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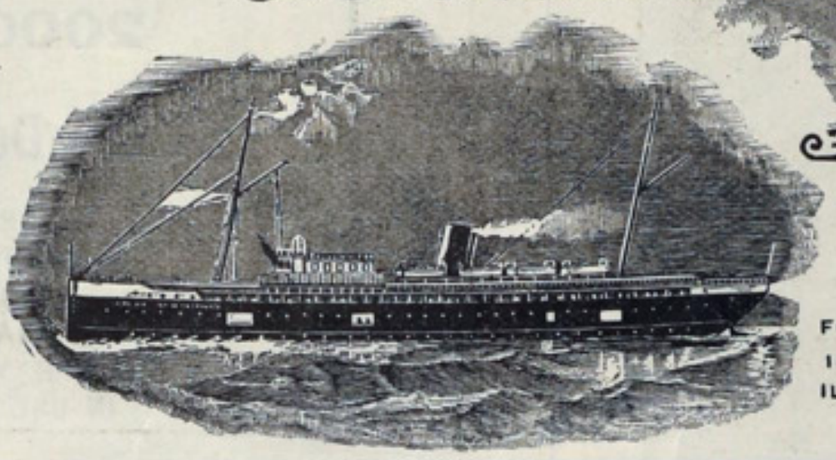

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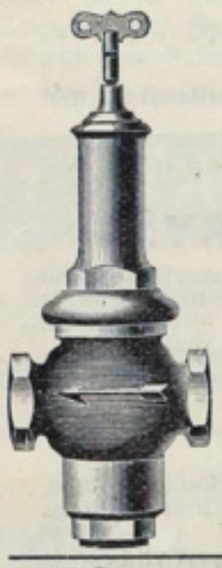

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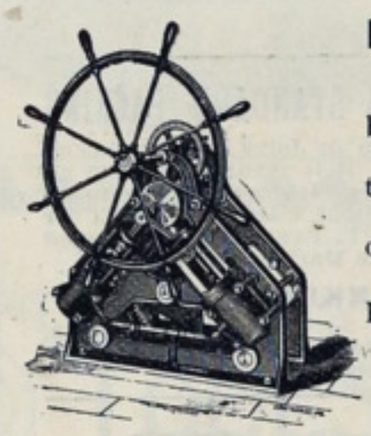

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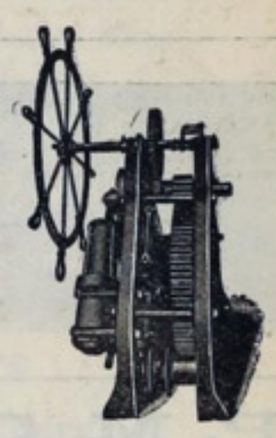

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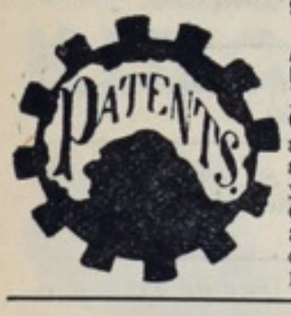

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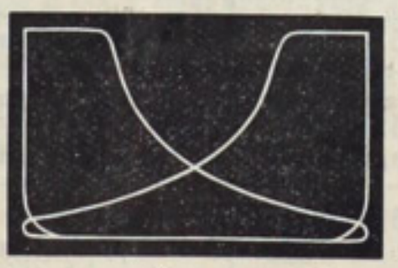

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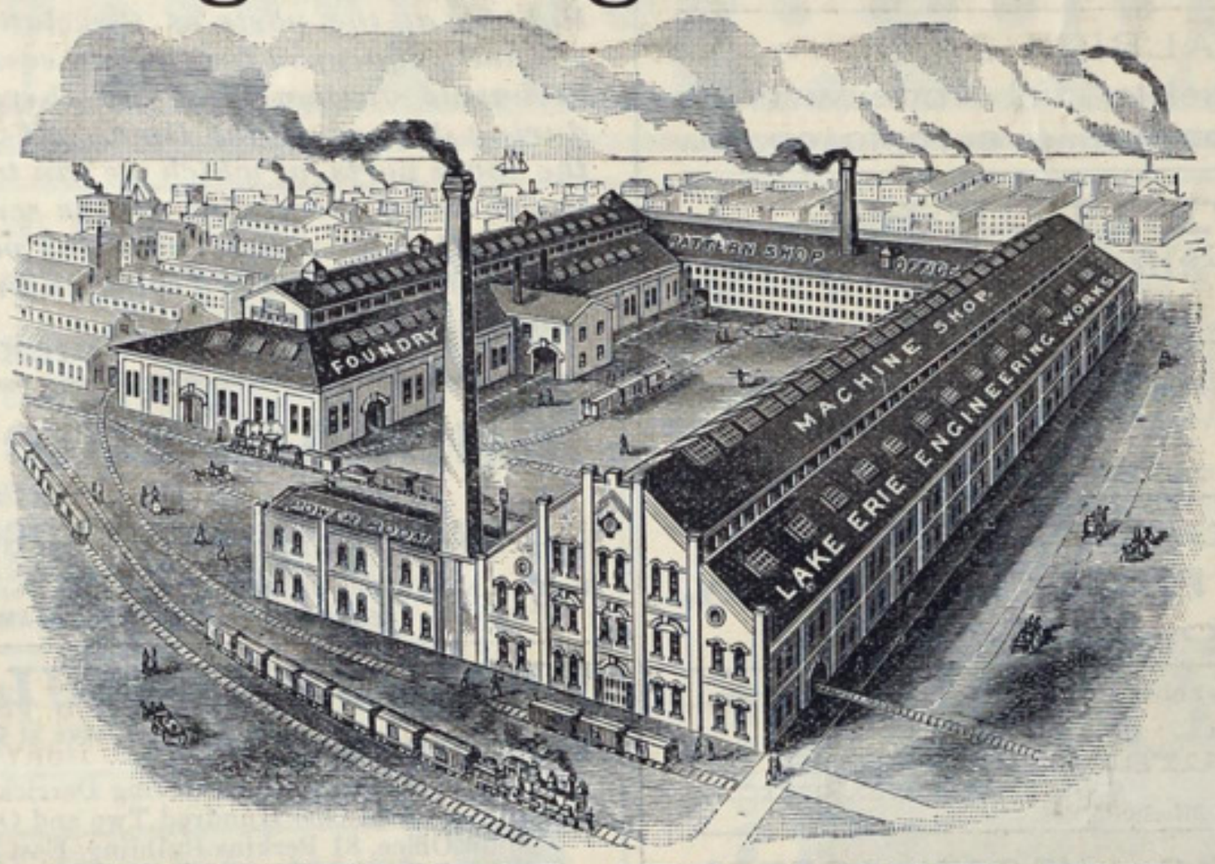

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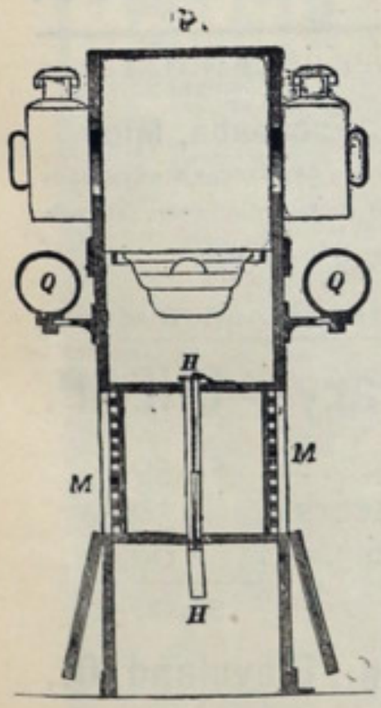

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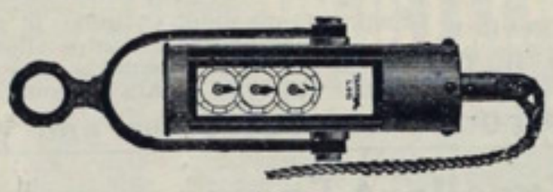

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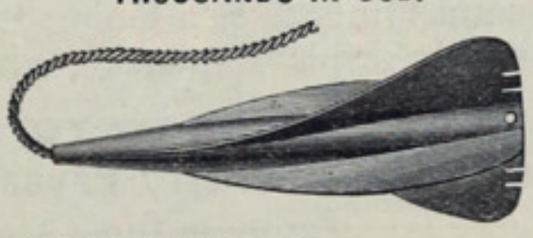

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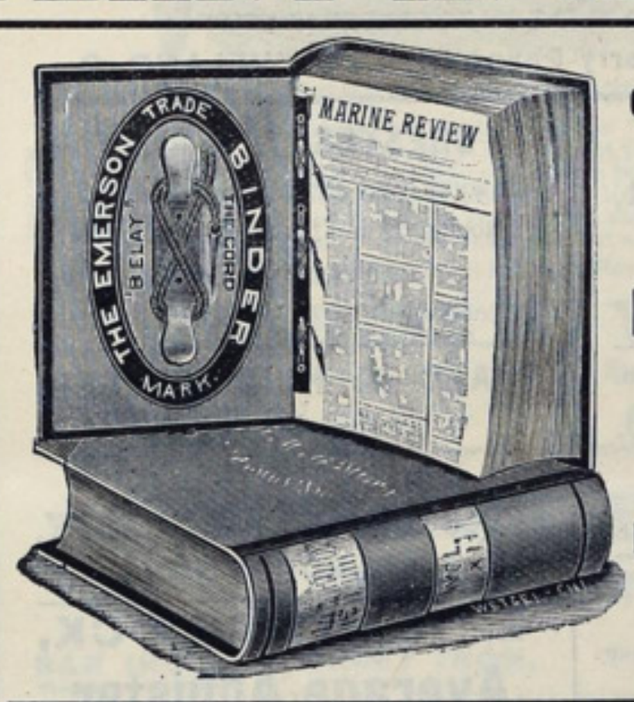

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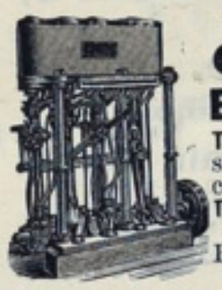

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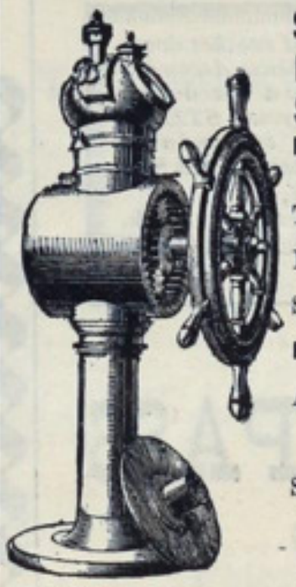

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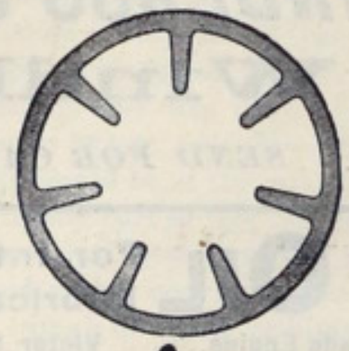

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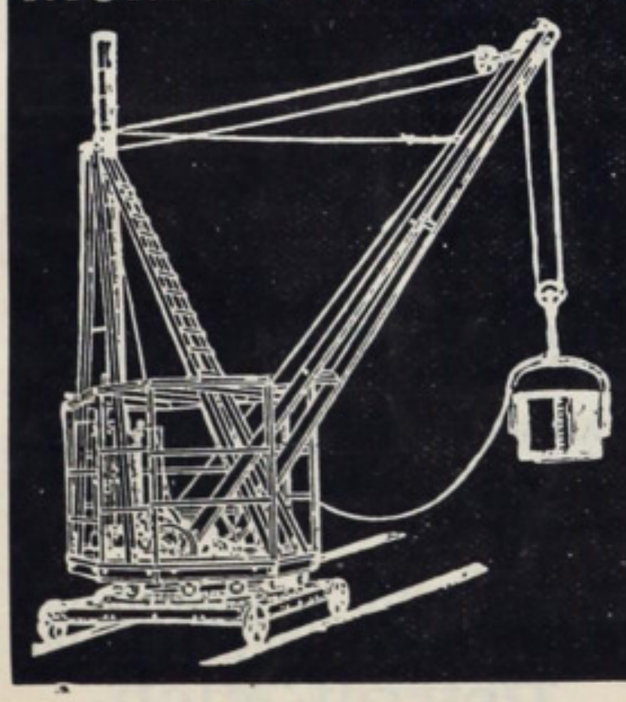

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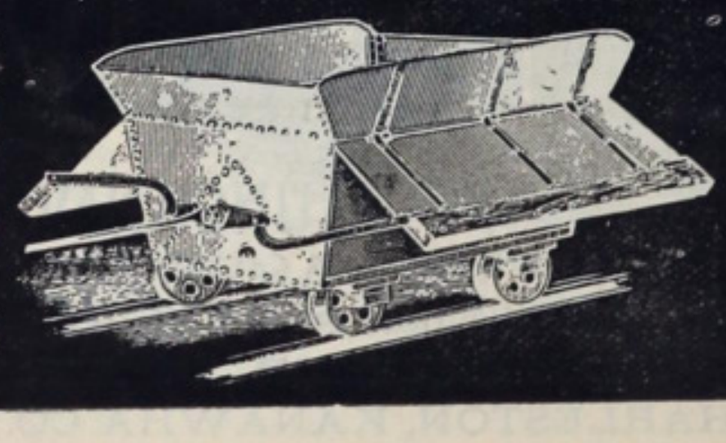

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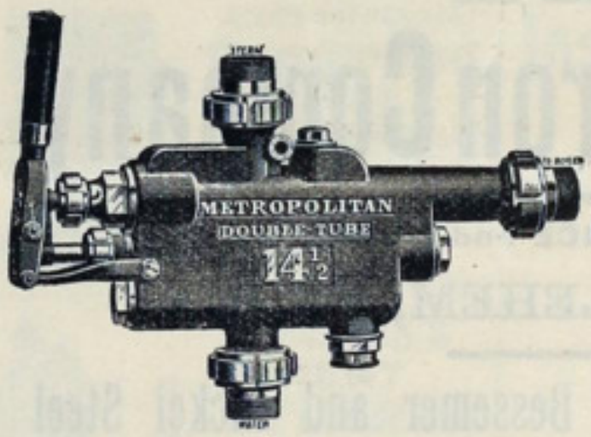

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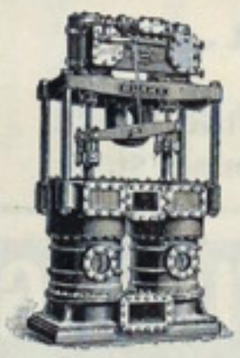

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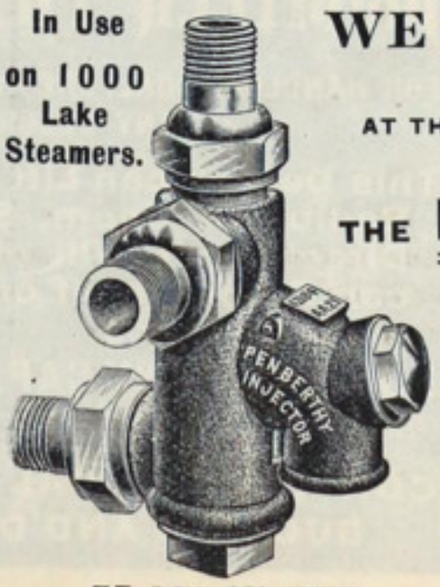

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